JANUARY • 1960

# FIREMEN

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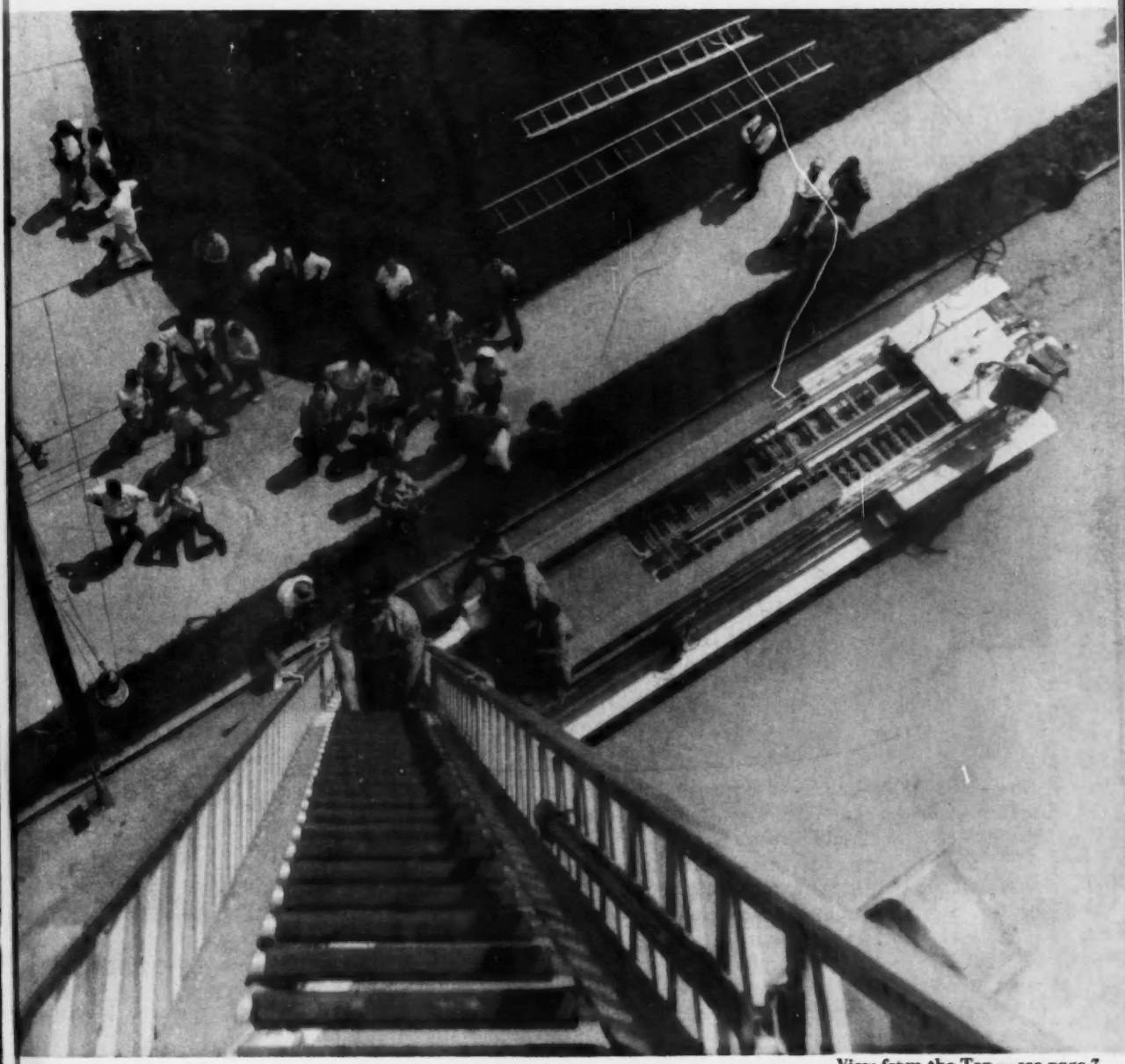

View from the Top — *see page 7*

TIONAL FIRE
OTECTION
SOCIATION

64th
year

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*WORKING SCHEDULES OF FIRE DEPARTMENTS* › › › › › *Page 12*

MSA
SAFETY EQUIPMENT HEADQUARTERS

**Only MSA backs up its label with:**
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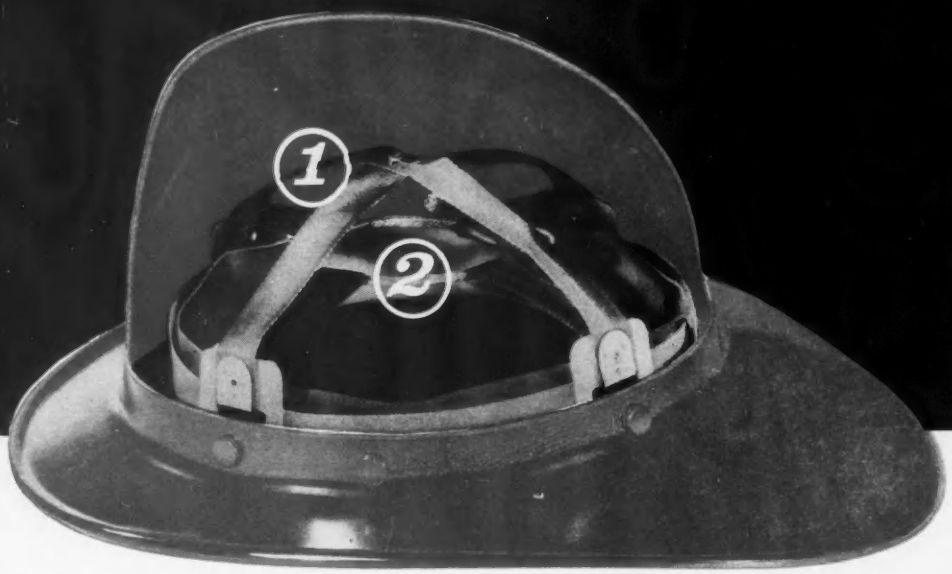
*soundest head protection advance in fire fighting history (1) permanently fixed upper cradle for safety (2) easily adjustable lower cradle for comfort*

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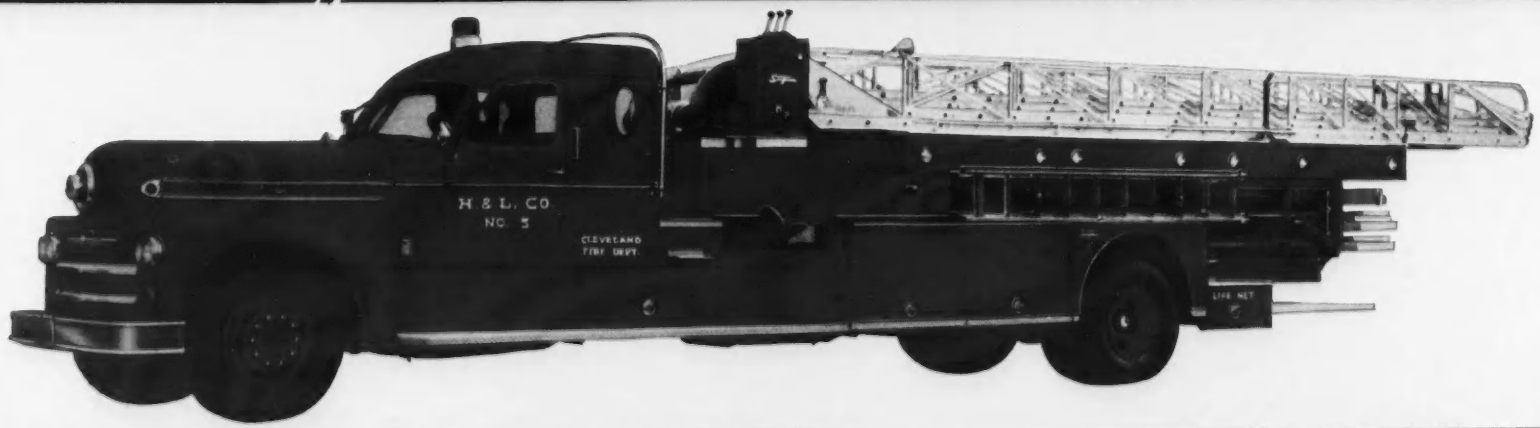

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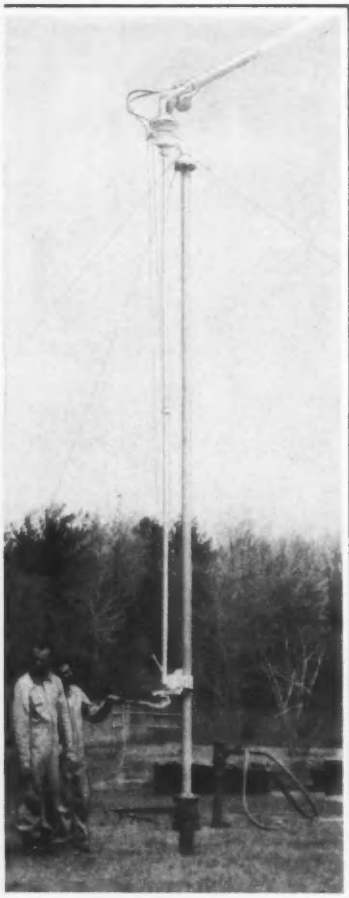
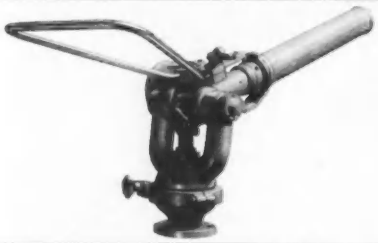


**Extended Manual Control Type** — Turret nozzles extend 10 to 20 feet above remote control station on deck or ground on standard units . . . greater remote extensions for special applications.



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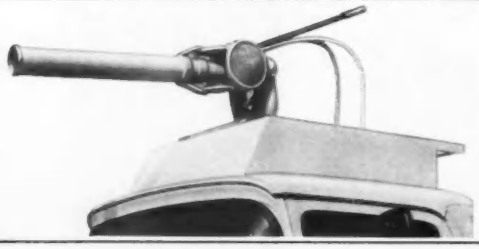

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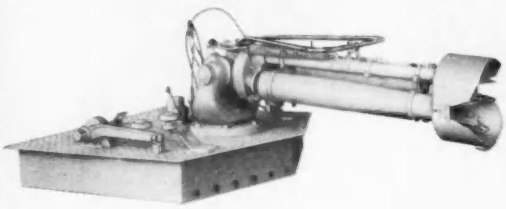
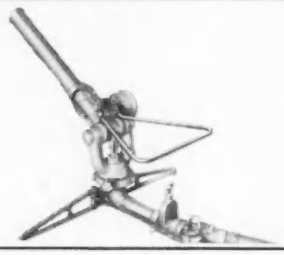


**Remote Hydraulic Control Type** — Power-controlled from within the cab. Single and dual models. Widely used on air crash rescue fire-fighting trucks.



**Portable Type** — Off the truck and into action in seconds! Goes wherever a fire fighter can bring the proper hose line into action!

On the truck or on the ground, fire fighters can hit fires *harder* using ROCKWOOD Turrets! At airports and refineries . . . in municipalities and throughout industry . . . these advanced-design fire-fighting aids are constantly proving their ability to extinguish fires faster.

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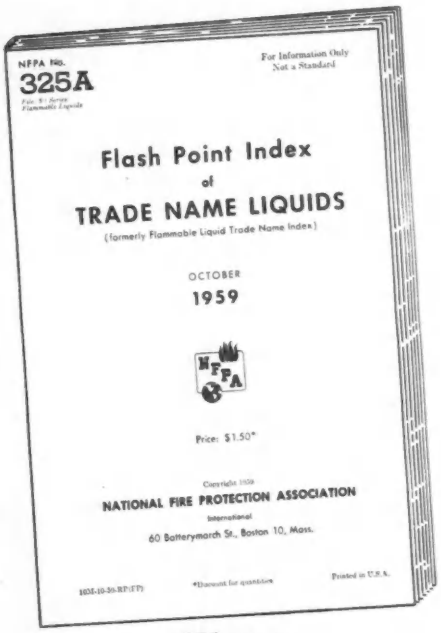


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FIREMEN

Volume 27 Number 1

A monthly magazine published for the fire service members of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

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**If the pattern** of the past ten years is maintained, in the next decade there will be more fire departments fighting more fires with better equipment and knowledge and, at the same time, conducting more intensive fire prevention programs than in any previous decade.

The 1950's brought record totals in the number of fires and the annual property loss caused by fire. At the same time, the number of paid, call and volunteer municipal fire departments in the United States increased just about 10 per cent, from approximately 18,000 in 1950 to nearly 20,000 at the start of this year.

The decade also brought terrible loss of life by fire, topped by the tragic school fire in Chicago, December, 1958. Severe losses also hit modern industry, such as the staggering impact of the General Motors fire in Livonia, Michigan. In the same period tremendous brush and forest holocausts on the West Coast forced man to fight fire from the air (with considerable success).

The past ten years brought tremendous improvement in fire department communications, in the utilization of two-way and three-way radio, portable power megaphones, mobile command centers and even television. There was an accompanying development in mutual aid operations between towns, areas, counties and states.

For the past decade municipal fire departments more and more developed sound public relations programs to gain much needed recognition from their communities. They made greater contact with the public through dwelling inspection programs, school fire safety education, baby sitter training and general year-round fire prevention activities. The 1959 NFPA Fire Prevention Contest just completed brought the largest number of entries from municipalities ever recorded. In those entries, municipal fire departments reported a total of 2,358,711 dwelling inspections during 1959 or their fiscal year ending in 1959.

More and more fire departments sought up-to-date information on fire protection and fire prevention. One indication of this was the increase in the number of fire departments that joined the NFPA. In January 1950, 1,384 fire departments had NFPA membership and 20,789 fire fighters subscribed to FIREMEN magazine. In January 1960, 2,795 fire departments are holding membership and 27,345 fire fighters are subscribing to the magazine. In addition, there are more than 3,000 individual NFPA member subscribers in industry, business and other fields.

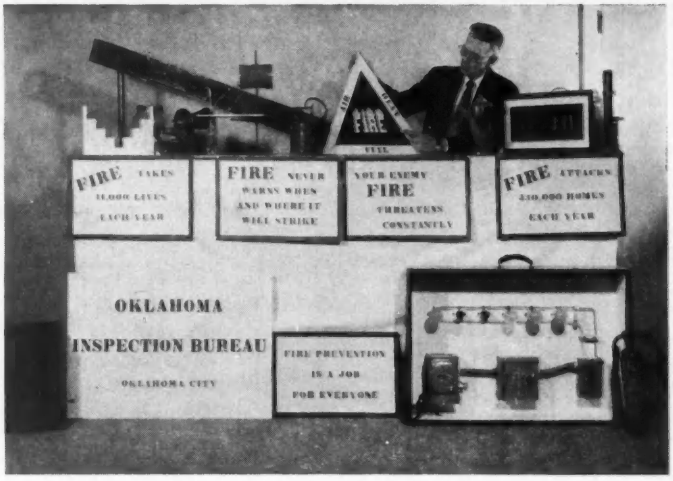
From 1940 to 1950 the yearly over-all total distribution of NFPA publications rose from 1,000,000 to 4,500,000. In the past ten years this yearly total rose from 4,500,000 to 9,500,000. In the same decade, the number of NFPA associate members rose from 12,750 to 17,000.

Most forecasts predict that the "Golden Sixties" will be the busiest, most productive decade in history. If the past decade is any criterion, the fire service can look forward to an era of more difficult and numerous fire problems and, paradoxically, greater advancement in fire fighting equipment and the knowledge of fire control than in any previous era.

**A man subject to vertigo** should try not to stand at the top of an aerial ladder. However, since he might like to know what the view is like, on this month's cover we show a photo taken recently at the Kentucky Fire School. While the effect may be dizzying, even the man with vertigo would find the aerial ladder a welcome path to the ground if he were standing at a window with fire crackling at his back.

WARREN Y. KIMBALL, Editor; PAUL R. LYONS, Associate Editor; HENRY S. GERE, Advertising Manager; DIANNE KOFMAN, Editorial Assistant; SHIRLEY TOBEY, Fire Service Department; VIRGINIA STILES, Advertising Department.

# USEFUL KITS FOR




# FIRE PREVENTION DEMONSTRATIONS

IN TEACHING fire prevention to the general public or to specialized groups, the average fire department representative can deliver a very effective presentation by using simple devices. These can be built by members of the department or perhaps can be purchased at a reasonable price. However they are obtained, the devices can prove extremely valuable to the instructor who wants to make a lasting impression with the audience. Properly made and utilized, they will help the instructor to present effectively the fundamental principles of fire behavior. By careful study he can supplement the demonstration with a well-planned talk which highlights the fire hazards represented and also stresses the basic fire prevention or fire protection principles to be followed for the particular hazard.

Some fire departments are already using such demonstration kits. However, from time to time, inquiries on this subject are sent to FIREMEN magazine. To answer these inquiries and to assist other fire departments who have not yet developed such kits, on the following pages and in next month's issue we present illustrations of materials that have been used successfully. Accompanying these illustrations are excerpts from fire prevention talks that have been given in particular demonstrations.

Many fire departments may wish to construct some of the items and perhaps to expand on the subject matter covered in the "talk."

On the following pages, for example, we show equipment used in fire prevention demonstrations by Lothar A. Smith, engineer of the Oklahoma Inspection Bureau, Oklahoma City, Oklahoma. Since 1952 he has given some 119 demonstrations in 68 cities using this equipment under the sponsorship of the Oklahoma Fire Prevention Association. His demonstration was given to the Oklahoma State Firemen's Association meeting in 1956, the Kansas State Fire School in 1957, and at the New Mexico Fire Marshals' Conference last year. According to reports, a number of fire departments subsequently built this equipment and are using it in their fire prevention lectures.

Below each illustration is a pertinent extract from the talk given by Mr. Smith. Fire department personnel who wish to develop a similar talk should try to include a few "local" fire department experiences for each subject. These experiences should be slanted toward the interests of the particular group, that is, school children, adult audiences, representatives of industry, hospital personnel and similar groups for which a demonstration might be presented.

In giving such demonstrations it is most important, of course, to follow the common-sense rules of fire safety. First, the demonstrator should be completely familiar with the equipment and know the potential of each demonstration. If he is going to use gasoline, dusts, gaseous fuels or other substances that might cause a violent reaction, he must use every precaution to avoid injury to himself or to some observer. In all cases it is advisable to have an assistant standing by with the necessary extinguishing equipment. In no case should a demonstration be given in violation of fire laws pertaining to the particular occupancy. It is fundamental that fire department personnel should show the greatest respect for the dangers of fire since the audience will be more impressed by that respect and by the observance of fire safety precautions.

For the most effective presentation it is important for the demonstrator to be able to use every piece of equipment skillfully and in an orderly sequence. It is helpful if he can memorize his speech so that his talk will be smooth and informal as well as within the necessary time limit. He should be prepared to answer questions on each phase of the demonstration and should be acquainted with fire codes pertaining to the subject.

The NFPA has a number of items which are useful for reference in preparing such fire prevention talks. These are described in the list of publications which is available free from the NFPA Executive Office.

FIGURE NO. 1
FIRE TRIANGLE

"What is necessary for a fire to occur? We represent this with our triangle of fire. First, we must have something that will burn, which we call a *fuel*, and represent it as the base of our triangle. This fuel may be a solid, liquid or gas. Next, we must have the second side of our triangle, *air* or sufficient oxygen to support combustion. We have in normal air approximately 21 per cent oxygen and to support combustion we must have approximately 15 per cent of this oxygen present. The third side of our triangle, and the one we are usually most concerned with, is *heat*, or source of ignition. This may be from an open flame, electric spark, radiation, friction or a chemical reaction.

"When fire does occur and the fire department is called, its job is to break down this triangle of fire. The fire fighters may remove the fuel from the fire, they may remove the air, or they may remove the heat through use of hose streams."

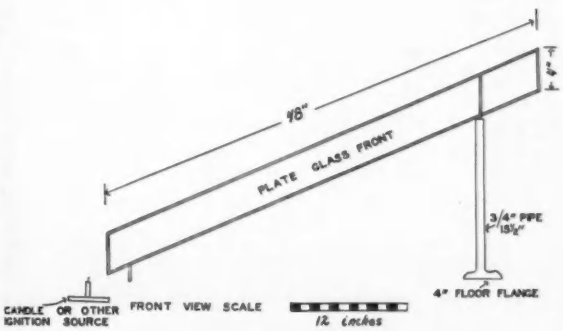



FIGURE NO. 2
TROUGH TO SHOW VAPOR TRAVEL
(MADE OF 4" METAL GUTTER)

"One of the characteristics of gasoline not commonly understood is its vapor density. When we open this container (open can) the gasoline vapors being liberated do not rise and pass off into space as many think. The vapors from gasoline are from three to four times as heavy as air and tend to settle to the lowest point in a building. Many fires occur because people think they can bring gasoline into the home with safety if they open the windows and let the vapors escape.

"To demonstrate that gasoline vapors are heavier than air and travel downward, we will put gasoline on this cloth and place it in the upper part of this metal trough with a glass front. If the vapors are lighter than air they will rise and pass off into space. If heavier, we will find them at the lower end of our trough. Notice that you do not see any vapors; they are invisible and often we do not realize they are present. If they find any source of ignition, they flash immediately with the flame traveling back to the container of gasoline. We will hold an open flame at the bottom of the trough and see if we can pick up some of the vapors — notice the rapid travel of fire back to the source of the vapors."

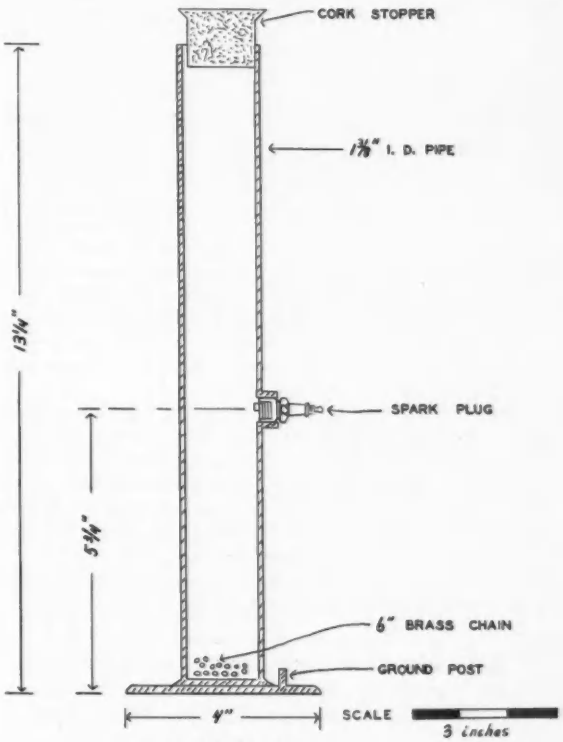



FIGURE NO. 3
EXPLOSION CHAMBER

"Many people do not understand that it takes only a small amount of gasoline vapors mixed in the air to form a flammable mixture. The flammable range of gasoline vapors in air is from 1.4 to 7.6 per cent. We want to demonstrate this for you by putting four drops of gasoline from this medicine dropper into our explosion chamber. Our source of ignition will be furnished by a spark through this spark plug. If we have within this chamber a mixture of gasoline vapors in the flammable range, we should get somewhat of a strong reaction from our four drops (ignite vapors).

"Two lessons we should learn from this: First, if four drops will make that much reaction, then how strong a reaction can you expect from that dishpan of gasoline brought into the home for dry cleaning? Secondly, if we had put the four drops of gasoline into this container before you came into this room, then passed the container around, most of you would probably have looked inside and said that it was empty because you did not see any liquid in it. Remember, it is the vapor from a fuel that burns or explodes, and not the fuel itself.

"Another danger is the use of improper electrical equipment such as this improvised drop light (show improvised light). These lights are often used in shops where gasoline vapors are present. If this light is dropped on the floor the bulb will break and the hot filament of this bulb breaking over the floor is hot enough to ignite gasoline vapors present. Many serious garage fires have been started like this."

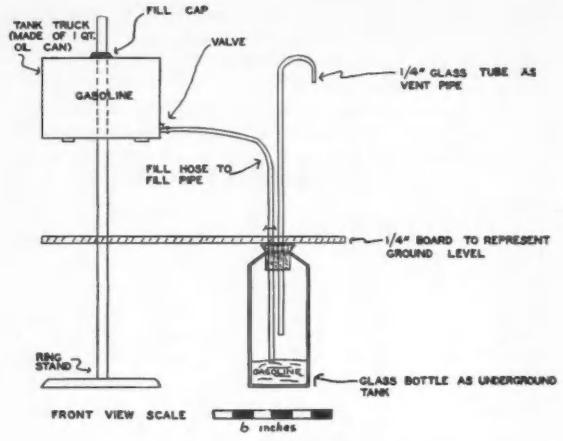



FIGURE NO. 4
UNDERGROUND GASOLINE STORAGE

"Before leaving gasoline, we would like to talk about underground storage of gasoline at our garages and service stations. In this demonstration, this board represents the ground level. Under the ground we have a large metal tank which we represent with this glass bottle. Coming from the tank we have a filler pipe, to which a hose can be attached, and a curved vent pipe extending into the air.

"This can represents the gasoline tank truck that drives up to refill the underground tank. It has a fill cap on top and a discharge valve at the rear, to which we attach this filler hose.

"Let's start the gasoline flowing from the tank truck into the underground tank. This heavy liquid flowing into the tank will force some of the heavy vapors out and at this time a fire may occur here at our vent pipe (ignite vapors). Notice that to extinguish this fire, all that we need do is to close off this discharge valve. The fire is out and we did not call the fire department."

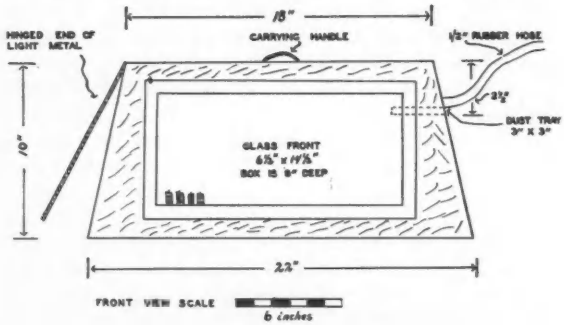



FIGURE NO. 5
DUST EXPLOSION BOX

"Finely divided materials such as shavings ignite and burn rapidly for several reasons. There is an abundance of air and oxygen all around the shavings to support combustion. The more finely a material is divided the more readily it will absorb heat; and the more readily it absorbs heat, the more readily flammable vapors from the fuel are driven off.

"Here we have a steel rod, and as you know, it will not ignite and burn readily when held in a flame. Next, some steel in a finely divided state, and you notice it ignites and burns.

"We have here some very finely divided wood that came from a sanding machine. We will put a small amount of this wood dust on this tray and place it in this box. For our source of ignition we will use four candles and place them in the other end of our box. To carry our fuel over to the candles, we will blow through this rubber tube and attempt to burn the dust for you (demonstrate). There you saw dust burning so rapidly that we had an explosion. If you watched carefully, you saw the end of this box give way as the explosion took place."

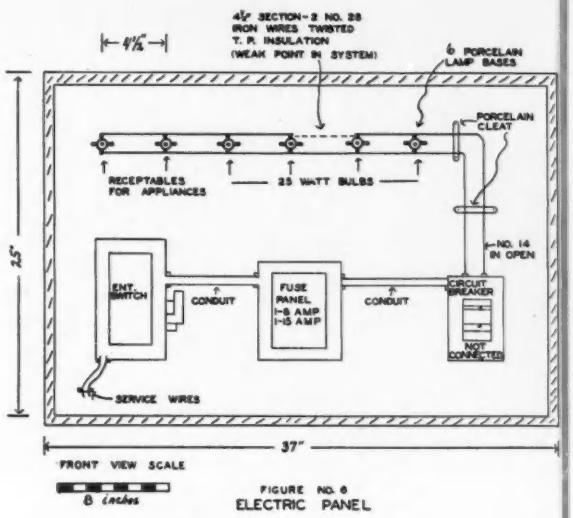



FIGURE NO. 6
ELECTRIC PANEL

"Here we have an apparatus designed to represent the wiring system in an ordinary building. First, we have the entrance conductors coming into the entrance switch, which controls the flow of current. Next, we have the fuse panel using the plug type fuses, or in some of the more modern buildings, we may have the automatic circuit breaker, as we have here.

"We will let these lights represent the normal load on this electrical circuit and with our 15 ampere fuse in place, everything is doing fine. We will now create an overload by plugging in too many appliances on one circuit and see what happens. First, someone plugs in this electric iron; someone else plugs in the coffee maker. These could be any other home appliances. Now, what has happened? Our fuse has blown, fused, or melted away, thereby stopping the flow of electricity and protecting our wiring from overheating due to this overload."

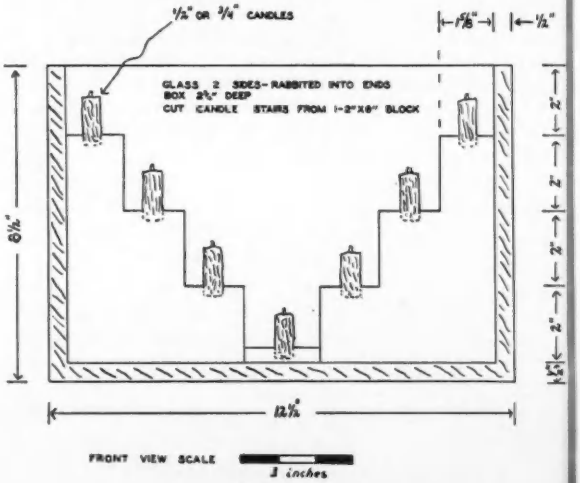
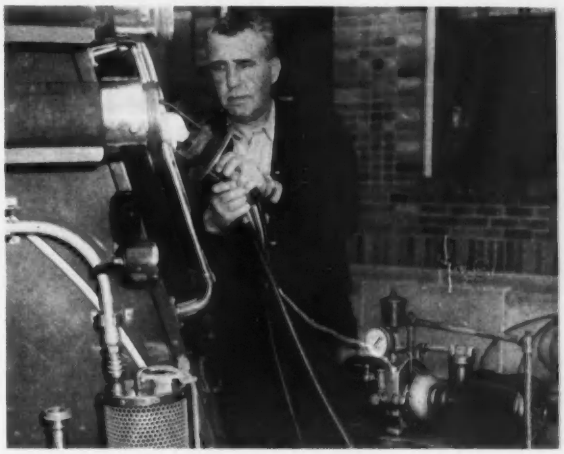



FIGURE NO. 7
CANDLES TO DEMONSTRATE $CO_2$ EXTINGUISHMENT

"Another thing we would like to explain to you is the use of $CO_2$, the extinguisher. We find that this extinguisher makes quite a lot of sound that many people, and particularly children, think is blowing the fire out. This is not the case, as we will show you.

"The extinguisher contains compressed $CO_2$ gas, which is one and one-half times as heavy as air and extinguishes fire by excluding oxygen. We will put some of the gas from the extinguisher in the glass jar and pour it into our box of burning candles. As the box fills with heavy gas, you will see the candles extinguished one at a time (pour $CO_2$ into box of candles). This is the way a $CO_2$ extinguisher controls fire."

Battalion Chief in charge of training A. M. Lockhart shows the sealing plate with light (left) and glass viewing plate.



Sealing plate with light and small diameter suction hose is inserted into male end of hard suction.

# CHECKING SUCTION HOSE

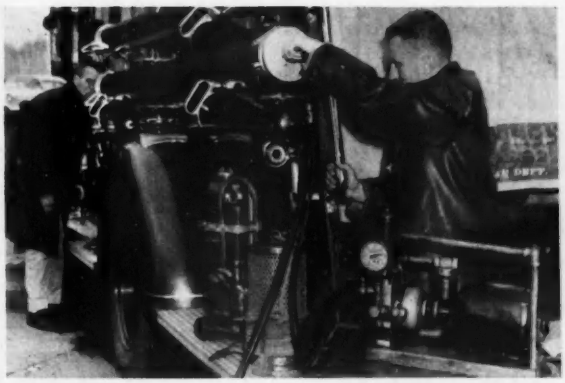
CHIEF Reynold C. Malmquist, who commands the Minneapolis, Minnesota, Fire Department, recently sent the pictures on this page to FIREMEN magazine. All hard suction hose used in Minneapolis is examined and tested during the annual pumper tests held each September.

The late master mechanic, Steven Sande, built the special testing kit shown on this page. It consists of a simple Vane type vacuum pump commonly used in the dairy industry. The pump is driven by a 60-cycle, ¼ hp electric motor and will draw 20 to 25 inches of vacuum. A sealing plate with an electric light attached is placed against the male end of the hard suction hose. A glass viewing plate is coupled to the female end. Then the vacuum pump is started and the interior of the suction hose can be observed through the viewing glass since the electric light illuminates the interior of the hose showing any defects.

As pointed out in NFPA Standard No. 19, hard suction hose recommended for fire department use must be of a design that permits low friction loss and must be able to withstand a vacuum of 23 inches of mercury and a pressure test of 200 psi. An interesting incident of suction hose failure was described in the October, 1959 issue of FIREMEN magazine. It is good practice for fire departments to check suction hose at least annually to see that it is in dependable condition for fire ground use.

NFPA Standard No. 198 — "Care of Fire Hose," points out that hard suction hose has a rubber lining, plies of fabric, a rubber cover, and a helix of wire set in rubber between the reinforcing layers of the fabric. Despite this reinforcing, hard suction hose is subject to damage from strain. If the hose is simply "bridged" between a pumper and a hydrant, strain on the hose at the end of the couplings can damage the lining or possibly rupture the hose. If the pumper happens to move after the hose has been connected to the pumper or hydrant, the suction hose can be ruined.

Sometimes, however, suction hose receives damage that is not evident in the casual inspection. For such occurrences, the kit shown on this page provides a useful means of spotting defects before they become dangerous. (*All photos by Minneapolis Fire Dept.*)



Two members of the Minneapolis Fire Department show how hard suction hose is examined with Vane type pump drawing vacuum.

Complete suction hose testing kit showing viewing plate, length of small suction hose and light in foreground, vacuum pump in rear.

# SCHEDULES OF FIRE DEPARTMENTS

**The following article was written to answer numerous requests on fire department working schedules now used in the United States. In general, the tables and discussion are presented in the order in which the schedules evolved, from the 84-hour week down to the 48- or 42-hour week. The article will be continued in forthcoming issues of the magazine.**

**by Warren Y. Kimball, Editor**

**Part II**

AS MENTIONED last month, fire departments commonly divide the 168 hours of a week between two platoons. Each platoon is responsible for manning first line apparatus for 84 hours per week, although the individual member assigned to a platoon seldom works this number of hours. (*See December, 1959,* FIREMEN—*Ed.*)

In the eastern United States, most fire departments work day and night shifts of 10 and 14 hours respectively. The platoons rotate from day to night duty at regular intervals. West of the Appalachians, fire departments commonly have platoons alternating on a 24-hour on and 24-hour off basis.

Whatever the arrangement, it is usually necessary that certain days off be granted to each member to bring his work week to the designated number of working hours of the department.

The tables on this page show assignments for 48 men to provide a minimum of twelve men on duty manning two engine companies and a ladder company. A two-platoon system is used with a 56-hour nominal work week.[1] Each member works two duty tours with his platoon and then has one duty tour off. With 24-hour shifts this provides 72 hours off for each member out of each six-day cycle. It may be noted that days off are scheduled so that each company normally has sufficient officers and operators on duty. In the three-company group illustrated, each tour of duty has one officer, one operator and two hosemen above the minimum manpower required to cover for absences. It should be kept in mind that a two-week vacation period will require that two men out of 48 be off duty much of the year. It must be expected that one or more men will be on sick or injured leave.

**Company Roster**
**Two Platoons — 24 Hours On and Off**
Showing Day Off after 5 Working Tours (12-Man Company)

| | A | B | A | B | A | B | A | B | A | B | A | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Captain | A | | A | | A | | A | | A | — | 72 | — |
| Captain | | B | | B | | B | | B | — | 72 | — | B |
| Lieutenant | A | | A | | A | | A | | 72 | — | A | |
| Lieutenant | | B | | B | | B | — | 72 | — | B | | B |
| Operator | A | | A | | A | — | 72 | — | A | | A | |
| Operator | | B | | B | — | 72 | — | B | | B | | B |
| Operator | A | | A | — | 72 | — | A | | A | | A | |
| Operator | | B | — | 72 | — | B | | B | | B | | B |
| Fire fighter | A | — | 72 | — | A | | A | | A | | A | |
| Fire fighter | — | 72 | — | B | | B | | B | | B | | B |
| Fire fighter | 72 | — | A | | A | | A | | A | | A | — |
| Fire fighter | — | B | | B | | B | | B | | B | — | 72 |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

Full day off in each two weeks provides 5-man shift with 12-man company roster. Each member works five 24-hour tours each two weeks. Average 72-hour work week.

**Company Roster**
**Two Platoons — 24 Hours On and Off**
Showing Day Off After 4 Working Tours (12-Man Company)

| | A | B | A | B | A | B | A | B | A | B |
|---|---|---|---|---|---|---|---|---|---|---|
| Captain | A | | A | | A | | A | — | 72 | — |
| Captain | | B | | B | | B | — | 72 | — | B |
| Lieutenant | A | | A | | A | — | 72 | — | A | |
| Lieutenant | | B | | B | — | 72 | — | B | | B |
| Operator | A | | A | — | 72 | — | A | | A | |
| Operator | | B | — | 72 | — | B | | B | | B |
| Operator | A | — | 72 | — | A | | A | | A | |
| Operator | — | 72 | — | B | | B | | B | | B |
| Fire fighter | 72 | — | A | | A | | A | | A | — |
| Fire fighter | — | B | | B | | B | | B | — | 72 |
| Fire fighter | A | | A | | A | | A | — | 72 | — |
| Fire fighter | | B | | B | | B | — | 72 | — | B |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 |

Average 67.2 hours per week.

A relief man will be needed on each shift of response group making a total of 38 men needed for 3 companies.

With a three-company response group of 48 men working an average of 56 hours a week as members of platoons responsible for alternate 24-hour periods, there are actually six groups of men working a 6-day cycle. Each member of a platoon has one 24-hour duty period off out of each three that his platoon works. Under this plan, to provide a minimum response group of 12 men (4 with each company), 3 officers, 3 apparatus operators, and 6 fire fighters must be on duty. To assure this minimum response with absences due to vacation and other leaves at least 4 officers, 4 operators, and 8 fire fighters must be assigned to each tour of duty on a shift basis. This provides 1 officer, 1 operator, and 2 fire fighters each day to maintain minimum required strength.

In assigning the duty groups, the odd numbered groups are shown on the A Platoon and the even numbered groups on the B Platoon. The officers and operators are assigned so that there are 2 of each in the six duty groups making up the platoons. Likewise, the 24 fire fighters are divided into six groups of 4 men each. A captain is assigned to each platoon but as the groups are assigned to duty there is only 1 captain and 1 lieutenant in each of the six groups.

The 56-hour nominal work week requires each group to work two 24-hour periods in each six days. This provides each member with 72 hours off consecutively after working two tours of duty. This period changes each week so that all members have equal time off.

---

The three company rosters show various cycles of days off with a two-platoon system working 24-hour shifts. The first table shows an arrangement where each member has a tour off after working five tours. This means that each member has a 72-hour leave out of each twelve days. The second table shows a 10-day cycle with 72 hours off after four working tours. It will be noted that unless an additional man is available on each platoon, several tours will be one man short. The third table shows an 8-day cycle in which each member has 72 hours off after working three tours. A company of 14 men (7 on each platoon) will provide at least five members on the duty tour (minus vacation and sick leave). On some tours an extra man will be available.

*(To be continued next month)*

**Company Roster**
**Two Platoons — 24 Hours On and Off**
Showing Day Off After 3 Working Tours (14-Man Company)

| | A | B | A | B | A | B | A | B |
|---|---|---|---|---|---|---|---|---|
| Captain | A | | A | | A | — | 72 | — |
| Captain | | B | | B | — | 72 | — | B |
| Lieutenant | A | | A | — | 72 | — | A | |
| Lieutenant | | B | — | 72 | — | B | | B |
| Operator | A | — | 72 | — | A | | A | |
| Operator | — | 72 | — | B | | B | | B |
| Operator | 72 | — | A | | A | | A | — |
| Operator | | B | | B | | B | — | 72 |
| Fire fighter | A | | A | | A | — | 72 | — |
| Fire fighter | | B | | B | — | 72 | — | B |
| Fire fighter | A | | A | — | 72 | — | A | |
| Fire fighter | | B | — | 72 | — | B | | B |
| Fire fighter | A | — | 72 | — | A | | A | |
| Fire fighter | — | 72 | — | B | | B | | B |
| | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 6 |

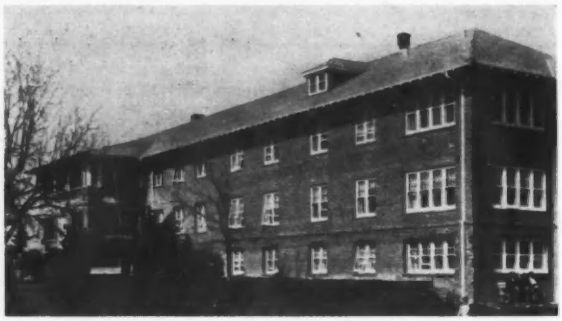
Average work week 63 hours.
Eight-day cycle, 3 duty tours followed by 72 hours off.
14 men provide 5-man duty roster (with excess man on 2 out of 8 days).

**Duty Assignments for a Three-Company Response Group Working a 56-Hour Week on a Two-Platoon System**
(After 6 tours of duty cycle is repeated)

| Assigned Platoon | | Platoons Working | | | | | |
|---|---|---|---|---|---|---|---|
| | | A | B | A | B | A | B |
| **Engine Co. 1** | | | | | | | |
| Captain | A | × | | × | | | |
| Captain | B | | × | | × | | |
| Lieutenant | A | | | × | | × | |
| Lieutenant | B | | | | × | | × |
| Operator | A | × | | | | × | |
| Operator | B | | × | | | | × |
| Operator | A | × | | × | | | |
| Operator | B | | × | | × | | |
| Fire fighter | A | | | × | | × | |
| Fire fighter | B | | | | × | | × |
| Fire fighter | A | × | | × | | | |
| Fire fighter | B | | × | | × | | |
| Fire fighter | A | | | × | | × | |
| Fire fighter | B | | | | × | | × |
| Fire fighter | A | × | | | | × | |
| Fire fighter | B | | × | | | | × |
| **Number on Working Tour** | | 5 | 5 | 6 | 6 | 5 | 5 |
| **Engine Co. 2** | | | | | | | |
| Captain | A | | | × | | × | |
| Captain | B | | | | × | | × |
| Lieutenant | A | × | | | | × | |
| Lieutenant | B | | × | | | | × |
| Operator | A | × | | × | | | |
| Operator | B | | × | | × | | |
| Operator | A | | | × | | × | |
| Operator | B | | | | × | | × |
| Fire fighter | A | × | | | | × | |
| Fire fighter | B | | × | | | | × |
| Fire fighter | A | × | | × | | | |
| Fire fighter | B | | × | | × | | |
| Fire fighter | A | | | × | | × | |
| Fire fighter | B | | | | × | | × |
| Fire fighter | A | × | | | | × | |
| Fire fighter | B | | × | | | | × |
| **Number on Working Tour** | | 5 | 5 | 5 | 5 | 6 | 6 |
| **Ladder Co. 1** | | | | | | | |
| Captain | A | × | | | | × | |
| Captain | B | | × | | | | × |
| Lieutenant | A | × | | × | | | |
| Lieutenant | B | | × | | × | | |
| Operator | A | | | × | | × | |
| Operator | B | | | | × | | × |
| Operator | A | × | | | | × | |
| Operator | B | | × | | | | × |
| Fire fighter | A | × | | × | | | |
| Fire fighter | B | | × | | × | | |
| Fire fighter | A | | | × | | × | |
| Fire fighter | B | | | | × | | |
| Fire fighter | A | × | | | | × | |
| Fire fighter | B | | × | | × | | |
| Fire fighter | A | × | | × | | | |
| Fire fighter | B | | × | | × | | |
| **Number on Working Tour** | | 6 | 6 | 5 | 5 | 5 | 5 |
| Number Assigned to Duty in Response Group* | | 16 | 16 | 16 | 16 | 16 | 16 |
| Number of Officers | | 4 | 4 | 4 | 4 | 4 | 4 |
| Number of Operators | | 4 | 4 | 4 | 4 | 4 | 4 |
| Number of Fire fighters | | 8 | 8 | 8 | 8 | 8 | 8 |

*Numbers shown are before absences due to vacations or leave.

Inn in Gatlinburg, Tennessee, features sprinkler system supplied primarily by pressure tank. More water is available through a 4-in. water main connection. (*Thompsons.*)



Home for the aged in South Dakota has complete automatic sprinkler system supplied by 6,000 gallon pressure tank. Building is outside city limits but fire department connection is provided so local fire department could supplement pressure tank supply by pumping from nearby 28,000 gallon reservoir.

# PRESSURE TANKS for SPRINKLER SYSTEMS

HOW can you provide sprinkler protection for nursing homes in an area where there are no water mains?"

This question brought considerable debate during a recent meeting of a state association of fire chiefs. Previously, there had been discussion of proposed legislation for improving fire safety in nursing homes. The mention of automatic sprinkler protection for these occupancies prompted the question.

Accordingly, on these pages, FIREMEN magazine presents a general summary of a type of sprinkler installation which can be made in certain structures, even though water supply from a municipal water main system is not available. More detailed information can be found in the NFPA *Handbook of Fire Protection* and in NFPA technical standards some of which are mentioned in this article. Another reference is the NFPA *Quarterly* reprint Q49–6 — "Sprinklers Beyond the Water Mains" (12 pages, illustrated, 25 cents per copy).

**Limited Water Supply Systems**

In considering sprinkler protection for any occupancy, the most important and useful standard to which a fire chief can refer is NFPA No. 13 — "Standard for the Installation of Sprinkler Systems." This has detailed recommendations of the many aspects of the sprinkler installation problem. (Actually, this particular standard dates back to 1896, the year the NFPA was organized. Printed in that year under the direction of the Committee on Automatic Sprinklers, the standard has been revised continually to the present date and is available in separate pamphlet form as well as in Volume IV of the National Fire Codes.)

The standard classifies automatic sprinkler systems in six general categories: wet pipe, dry pipe, pre-action, deluge combined dry pipe and pre-action, and — important to this article — limited water supply systems. This last named is defined as "A system employing automatic sprinklers and conforming to these standards but supplied by a pressure tank of limited capacity." The standard also points out that a pressure tank of adequate size makes a good primary supply when used in conjunction with an adequate secondary supply, or may be acceptable as a single supply. The evaluation of the protection which limited water supply sprinkler systems afford is generally left to the "authority having jurisdiction."

Even though the water supply is limited, in all other respects the sprinkler system should be just as reliable and efficient, for the area it is designed to protect, as a complete sprinkler system. The sprinkler heads and

piping must be of "approved" type and size, the pressure supplied to the heads must be adequate, and the general layout of the system and spacing of heads must provide efficient fire protection for the area in which it is installed. A standard pressure tank system, properly designed and installed for the particular occupancy and hazard, should give dependable protection for life and property for the duration of the water supply.

**Classification of Occupancies**

In Standard No. 13 occupancies are classified into three groups: light hazard, ordinary hazard and extra hazard occupancies. In general, for light hazard occupancies, the recommendations permit greater spacing between sprinkler heads. For these occupancies a sprinkler head might be assumed to protect up to 200 sq. ft. which is a larger coverage than is recommended for industrial or mercantile buildings. Exception is made, however, for certain areas such as attics, basements, kitchens, laundries, storage areas and work rooms, where sprinkler head spacing is required to be similar to that in ordinary hazard occupancies.

Defined as light hazard occupancies which can be protected by a limited water supply system employing automatic sprinklers are the following:

Apartments, asylums, churches, clubs, colleges and universities, dormitories, dwellings, hospitals, hotels, institutions, libraries, museums, nursing, convalescent and care homes, office buildings, prisons, public buildings, rooming houses, schools and tenements.

Typical of structures considered as ordinary hazard occupancies are bakeries, distilleries, electric generating stations, flour mills, and warehouses.

Aircraft hangars, chemical works, oil refineries and solvent extracting plants are some of the structures considered as extra hazard occupancies.

The water supply necessary for a certain occupancy can be determined partly by the number of sprinklers expected to operate in the event of fire. In the calculation of this number, the following factors are considered: the occupancy, combustibility of contents, areas shielded from proper distribution of water, height of stockpiles, type of ceiling construction, ceiling heights, unprotected vertical openings, undesirable draft conditions, and the size of undivided areas.

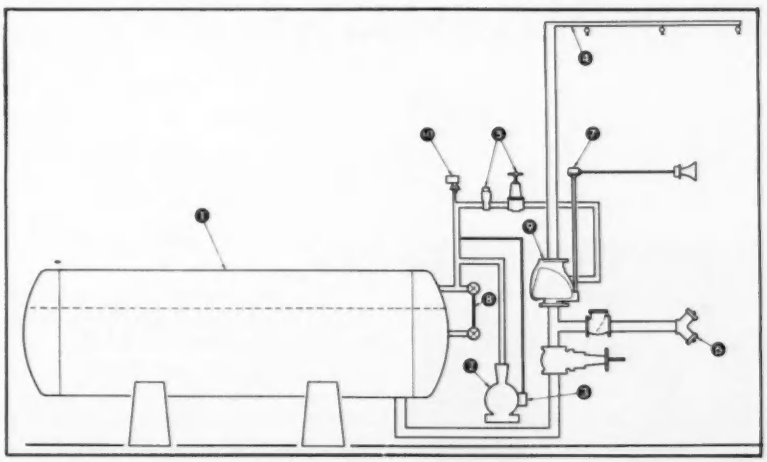
**System Operation**

In providing sprinkler protection through limited water supply, the water source can be a pressure tank or a gravity tank. For either installation, the "authority having jurisdiction" should be consulted.

The minimum water supply required for light hazard occupancies is 2,000 gallons. Pressure tanks must provide enough pressure to raise water to the top line of sprinklers and to provide each head with 15 psi pressure until the last water is discharged.

Several makes of pressure tanks are available on today's market for supplying sprinkler systems in light hazard occupancies. However, because of the large variety of structures and the wide range of fire hazards, each system must be specially designed for the particular building. It is essential, of course, that all equipment be installed by experienced sprinkler contractors and checked and maintained periodically to assure that the system is always in operating condition.

Usually pressure tanks are filled to about two-thirds of capacity and then pressurized with air or nitrogen.



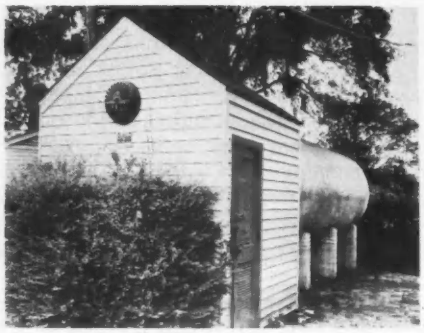
**Sketch of Typical Pressure Tank System.** ("Aptan System," Automatic Sprinkler Corporation of America)

1. Water supply tank capacity is determined by requirements. Constructed to A. S. M. E. standard specifications for working pressure of 150 psi. 2. Air compressor, air-cooled type, with belted drive from constant duty motor. Equipped with automatic thermo overload protector switch designed to start under full load. Capacity is sufficient to develop required pressure in water tank and distribution system in four hours or less. For rate-of-temperature-rise systems, a separate compressor is employed to maintain pressure in the thermo-pneumatic equipment. 3. Compressor motor control is automatic. Magnetic switch interrupts power to the air compressor when the pressure-type electric alarm switch operates. 4. Distribution system of risers, cross-mains, branch and feed lines to sprinklers or nozzles. Sizes determined by standard schedule of piping. Supply line from pressure tank to control valve is at least 2½-inch size. Type and temperature rating of sprinklers is determined by the system installed and occupancy of the property. 5. Pressure regulator and solenoid air valve automatically controls air input to sprinkler piping in dry pipe systems. 6. Fire department connection permits fire department to pump directly into sprinkler piping. 7. Alarm switch is an automatic pressure-operated device with two sets of contacts for controlling two electric circuits. In dry pipe systems, it controls operation of the air compressor, solenoid valve and fire alarm. In wet pipe systems, it controls operation of the air compressor and operates the fire alarm. 8. Water level gage provides constant reading of water level in tank. 9. Control valve. Different models are used for wet pipe, dry pipe and rate-of-temperature-rise systems. 10. Low pressure switch sounds trouble signal if air pressure is not maintained.

A minimum air pressure of 75 pounds by the gage is essential and when the bottom of the tank is below the highest sprinklers served, the air pressure by the gage must be at least 75 pounds plus three times the pressure caused by the column of water in the sprinkler system above the tank bottom. The formula for calculating the necessary air pressure is contained in Section 344 of Standard No. 13.

When a pressure tank is the sole supply for sprinklers, there should be an approved means for automatically maintaining the required air pressure. It is essential, also, to provide an approved trouble alarm to indicate low air pressure and low water level. This alarm should be supplied from an electric branch circuit independent of the air compressor.

When the sprinklers operate, the pressure forces the water through the system, the air compressor automatically maintains required air pressure in the supply tank and the alarm system goes into operation.



Baton Rouge Country Club's sprinkler system is supplied by this 9,000 gallon pressure tank in the Valve House. In northern climate, provision would have to be made to prevent freezing. (*Myles De Russy.*)

In all cases, however, it is important that the sprinkler systems have at least one fire department connection so that the limited water supply may be bolstered by water pumped from tank trucks or some other source.

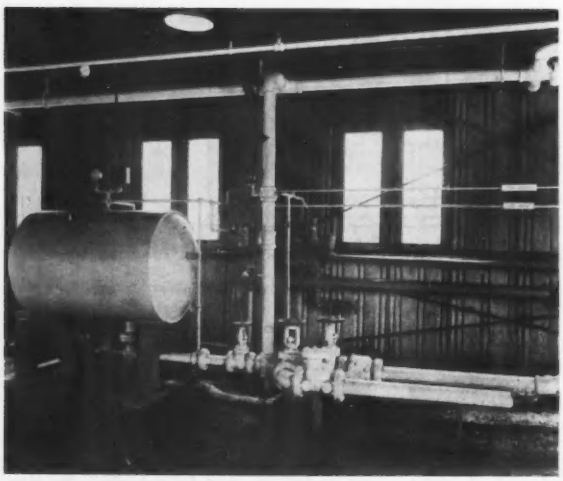


Photo of Grinnell Simplex pressure tank installation for sprinkler system. Note pressure gage and low pressure alarm on top of tank. Parallel piping at right center are for pump and air supply.

The same fire ground procedure is followed for sprinkler systems with limited water supplies as for those systems supplied by city water mains; that is, one of the first responding pumpers connects to the sprinkler system and prepares to maintain pressure in the system until the fire emergency is controlled.

It will be worthwhile for fire department members to study these pressure tank systems when they find them during inspections, to become familiar with the essential design and function of the systems for the individual occupancies.

## 2,000-Gallon Tanker

CHIEF Daniel S. Smith of the Sutton, Massachusetts, Fire Department is justly proud of the department's latest acquisition, a new 2,000-gallon tanker. Built by Farrar of Westboro, Massachusetts, on a large International 10-wheeler chassis, the truck has a 750 gpm front mount pump. A photo taken at a recent demonstration shows the apparatus supplying two 2½- and three 1½-in. lines. This is the eighth piece of apparatus housed in three stations in this small rural community. Other apparatus includes a 500-gallon pumper, a patrol jeep used in brush and woods fires and other apparatus bringing the department's water-carrying capacity to over 6,000 gallons. This is backed up by mutual aid from surrounding towns in Worcester county.

The new tanker cost $14,500 including radio equipment purchased out of matching civil defense funds and a new electronic siren.

Fire department members are enthusiastic in their reports on successful stops already made with the new truck of serious country fires. Where formerly long lines had to be laid to supply anything larger than 1½-in. hose, now 2½-in. lines can be placed in service within seconds after the big machine arrives and the use of supply tankers eliminates the frustrations of long pumper relays in keeping the streams operating continuously. They testified to the ease with which the large vehicle handles and may be turned even in confined spaces. As the area protected is well served by all-weather roads kept clear in winter there is no problem in responding to country fires particularly with power and flotation provided by the eight rear wheels. The jeep and other smaller apparatus are available for off-road service.

## Constant Flow Nozzle

EVERY fire department needs a heavy stream nozzle — preferably one that provides a selection of patterns from straight stream to fog. Shown here is a new 525 gpm at 100 psi fog nozzle, manufactured by Akron Brass Company, which has a constant flow at all stream settings. The picture shows this nozzle on a single, short 2½-in. line from a pumper. This line has been secured for safety but has sufficient mobility to permit one man to direct and control the stream easily. With the single short pumper line this nozzle discharged about 450 gpm at 75 psi.

The same fog nozzle, attached to a portable monitor nozzle properly supplied by two 2½-in. lines, discharges 525 gpm at 100 psi. This would be the recommended procedure where a heavy stream device is available. Hosemen should not attempt to handle a 500 gpm stream that is not properly secured.

An interesting feature is that, because the flow is uniform at all stream patterns, there is no change in nozzle reaction with change in settings. Full flow is obtained either with the straight stream or wide angle fog. This makes the job of both the nozzlemen and pump operators much easier. Where no tree, pole or other sturdy fixed object is available to secure the line, it may be lashed to a roof ladder with standard line straps or ropes to improvise a heavy stream device. In some cases it will be possible to secure the line to a piece of apparatus. In using a roof ladder to hold the nozzle, the hooks are opened to anchor and elevate the ladder and the line is laid under the rungs and brought through the ladder near the top to provide the necessary working line. A man can sit on the top of the ladder in back of the hose and direct the stream.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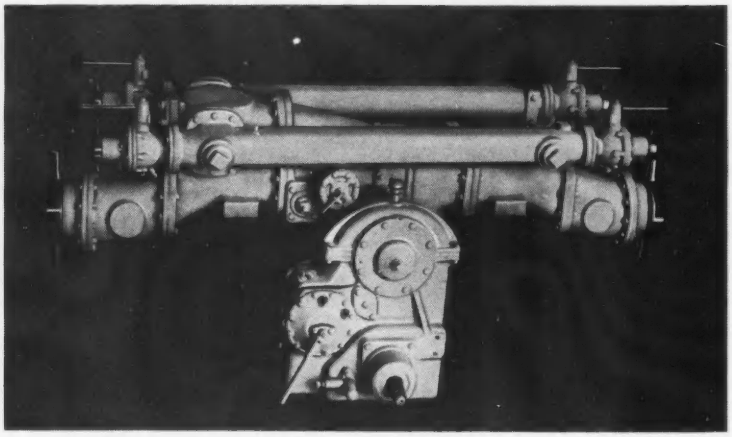
## The Inside Story

# *Why it pays to Specify* HALE . . .



Many a bad fire has been stopped in its tracks because an experienced Fire Chief had the forethought to *specify* the right Pumps for his fire hazards — *before purchase.*

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**Maximum Working Pressure 350 PSI**
**Maximum Hydrostatic Pressure 600 PSI**

Here is a pump with clean, direct water ways for highest efficiency.

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# Important Fire Service Dates

ILLINOIS:

**March 5-6:** Illinois Association of Fire Protection Districts, 17th annual meeting, Hotel Pere Marquette, Peoria. Contact Frank E. Poor, secretary, P. O. Box 500, Prospect Heights.

MARYLAND:

**February 9:** The Fourth Annual Industrial Fire Protection Short Course, Fire Service Extension Building, University of Maryland, College Park. Contact Robert C. Byrus, director, P. O. Box 85, College Park.

NEW JERSEY:

**January 21:** Gloucester County Firemen's Association, regular meeting, Malaga. Contact Walter H. Mattson, secretary, 29 Home Avenue, Gibbstown.

**February 18:** Gloucester County Firemen's Association, regular meeting, Janvier. Contact Walter H. Mattson, secretary, at above address.

**March 17:** Gloucester County Firemen's Association, regular meeting (Old Timers' Night), Harmony, Mullica Hill. Contact Walter H. Mattson, secretary, at above address.

*(Continued on page 21)*


**FD RESCUE MARKERS**
**TO**
**"I"DENTIFY**

FIRE I DEPARTMENT

**The Homes of the AGED, BLIND, BEDRIDDEN and HANDICAPPED**

*Speed up rescue when needed — Build good will in your community.*

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## Important Fire Service Dates

(*Continued from page 18*)

NEW YORK:

**January 19:** Dutchess County Volunteer Firemen's Association, quarterly meeting, Hughsonville. Contact Albert Belle Isle, secretary, Box 725, Glenham.

**January 19:** Ulster County Volunteer Firemen's Association, monthly meeting, Esopus. Contact Fred C. Harder, secretary, 34 Jarrold Street, Kingston.

**January 24:** New York State Association of Fire Chiefs, mid-winter meeting, Wellington Hotel, Albany, 10 a.m. Contact Chief Ward A. Bohner, secretary, Van Buren Drive, Kinderhook.

**January 26:** Orange County Volunteer Firemen's Association, regular meeting, Cronomer Valley. Contact Kenneth Fowler, secretary, Harriman.

**February 7:** Erie County Volunteer Firemen's Association, regular meeting, Aetna Hose Company, Depew. Contact Chester S. Herbold, secretary, 481 Harris Hill Road, Bowmansville.

**February 9:** Sullivan County Volunteer Firemen's Association, regular meeting, Long Eddy. Contact William Harris, secretary, Pond Eddy.

**February 12:** Rockland County Volunteer Firemen's Association, monthly meeting, Cosgriff Hose Company, Haverstraw. Contact Merle R. Blauvelt, secretary, 142 Depew Avenue, Nyack.

**February 16:** Ulster County Volunteer Firemen's Association, monthly meeting, Kingston. Contact Fred C. Harder, secretary, at above address.

**February 29:** Putnam County Volunteer Firemen's Association, quarterly meeting, Garrison Fire House, Garrison. Contact Morris DeWitt, secretary, P. O. Box 602, Mahopac.

**March 11:** Rockland County Volunteer Firemen's Association, monthly meeting, Pearl River. Contact Merle R. Blauvelt, secretary, at above address.

(*Continued on page 22*)


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Convert your spare time into steady income selling most popular line of Belts and Buckles with Fireman's personal initials, first name or nickname with miniature replicas of actual fire equipment beautifully enameled, also lapels, tie clasps, key chains, money clips, and cuff links. Excellent repeat business. We furnish you with FREE complete sales kit. Really nice part-time money producing items.

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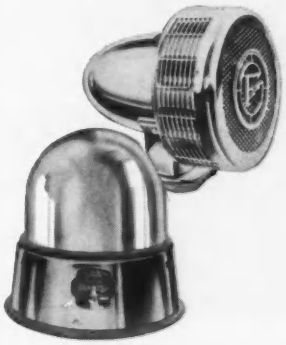

You have to use your head to get through modern day traffic and we don't mean like the Ram in the popular song. It's just sound reasoning that your apparatus is useless until it arrives at the scene! By the same logic, *nothing but the best audible and visual signals* will let you set any records for prompt arrival.

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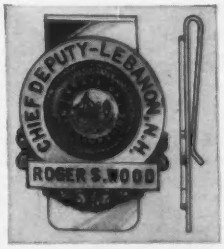


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**CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.**

**SINCE 1836**


*(Continued from page 21)*

**March 15:** Ulster County Volunteer Firemen's Association, monthly meeting, Marlboro. Contact Fred C. Harder, secretary, at above address.

**March 29:** Orange County Volunteer Firemen's Association, regular meeting, Fort Montgomery. Contact Kenneth Fowler, secretary, Harriman.

OHIO:

**February 24:** Central Western Firemen's Association, bi-monthly meeting, Fairborn Fire Department, Fairborn. Contact Chief M. L. Warner, secretary, Central Fire Station, Fairborn.

RHODE ISLAND:

**January 27:** Pawtuxet Valley Firemen's League, regular meeting, Oaklawn Fire Association, Oak Lawn. Contact Everett F. Fiske, secretary, 34 Pleasant Street, West Warwick.

**February 24:** Pawtuxet Valley Firemen's League, monthly meeting, Harris Fire Company. Contact Everett F. Fiske, secretary, at above address.

**March 30:** Pawtuxet Valley Firemen's League, regular meeting, Volunteer Fire Company, Hill Farm Road. Contact Everett F. Fiske, secretary, at above address.

SOUTH CAROLINA:

**January 25:** Fire service training classes will be held in Turbeville through January 29. Contact H. B. Wells, instructor, Fire Fighter Training, 1539 Harrington Street, Newberry.

**March 7:** Fire service training classes, Union, through March 11. Contact H. B. Wells at above address.

TENNESSEE:

**February 9:** Training classes in radioactive material, Tennessee State Fire Training Center, Murfreesboro, through February 11. Contact Homer D. Elkins, Instructor-Coordinator, Fire Service Training, 215 Chestnut Street, Chattanooga.


**FIRE CHIEF WANTED**

**Applications are invited for the position of Fire Chief, Village of Hinsdale, Illinois. Hinsdale is a residential suburb, population 13,000, located 20 miles west of Chicago. Fire Department includes four regular firemen plus 15 volunteers. Applicants should include age, education, special training and experience.**

**Salary — $5,640**

Address applications to

**L. M. CARLMAN**
**VILLAGE MANAGER**
**HINSDALE, ILLINOIS**

## Fire Patrol Cars for Omaha

CHIEF Eugene W. Fields of the Omaha, Nebraska, Fire Department reports that he now has five patrol cars operating in each district. Inspectors of the Fire Prevention Bureau are assigned to each district and coordinate their activities with the respective district chiefs. The new patrol cars are equipped with cameras to take pictures of fire hazards for court presentation and condemnation proceedings. The patrol cars were given to the Omaha Fire Department by the Omaha Association of Insurance Agents. Cost of the two-way radio-equipped cars was $8,564. (*Omaha Fire Dept. photos.*)

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ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Hose is self-propelled. Simple one-man operation. With or without detergents, ashes, glass and sludge are automatically scrubbed out and flushed away. Lengthens hose life. Foot-Pedal Operation.

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Approved by Underwriters' Laboratories . . . and Canadian Standards Association. Recommended by all leading fire hose manufacturers.

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**PORTO-RAK *MOBILE* HOSE STORAGE AND LOADING UNIT**

Saves valuable space. Holds 1,800 ft. of 2½" hose — proportionately more of 1½" — in an 8 ft. space (when loading table is detached). Roll it right up to the truck for reloading — out of the way when not in use. Equipped with locking fiber-wheeled casters.

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# CHANGES IN TULSA

ONE of the outstanding fire departments in the southwestern United States is that commanded by Chief G. L. Sartain in Tulsa, Oklahoma. For some time, the department has been improving its facilities and some of the newest attractions are shown on this page.

The new No. 22 fire station in Tulsa (shown above) is an example of the attractive and efficient new fire stations being provided for this progressive fire department. Each new station is designed to accommodate two companies (engine and ladder) as the needs of the city require. There are attractive air-conditioned living quarters adjacent to the large apparatus room which has apparatus doors at either end. A well ventilated hose tower with electric hoist for elevating hose is provided. Adjacent to the base of the tower is a hose storage and equipment room. These stations with modern furnishings cost approximately $75,000 each.

The photo below (left) shows the old fire alarm control central station equipment in Tulsa which provided no convenient control operating point. Pictured at right is the new operators' console as laid out by Fire Alarm Superintendent Pointer. At the left of this photo are tape recorders monitoring fire phones and radio with

24-hr. time recording tapes. In the desk slides are complete indices of every location in the city identified by fire alarm numbers for every block in the city and indicating units to be dispatched. All incoming alarm signals are recorded on tape in front of the operators and alarm transmitters and keys are within easy reach. The microphones control both the voice alarm circuits which are the primary circuits to the fire stations and the fire department radio. A control board with colored lights shows the status of every unit in the department, whether in quarters, on the air, or out of service and shows acknowledgment by all units of signals sent out. Units not acknowledging are contacted by voice circuit or radio.

At the far right are tape recorders for the fire alarm telegraph circuits used to confirm all movements of companies for both voice and box alarms and to indicate when companies are back in service. While the photo shows two operators seated, the console is arranged so that additional fire alarm personnel can assist in dispatching as conditions warrant.

This excellent facility was only part of a fire alarm modernization program and part of the cost was defrayed by Federal matching funds for civil defense fire radio equipment. The equipment was designed to allow for future growth of the department. Other features of the office are air conditioning, soundproofing and excellent lighting. Tulsa fire fighters work a 56-hr. week and after 20 years are eligible for retirement at 50 per cent of pay.

Unique structure at Tulsa Fire Department training grounds is designed for roof ladder drill. Lower section is used for practice with shorter ladders; higher section for the longer roof ladders.

Here's a forcible entry tool made by the Tulsa Fire Department. At one end is a chisel-like blade to be driven between a door and jamb. The other end has a hook for forcing lock hasps. Built-in hammer provides force needed to drive the blade. The tool is carried on each pumper; larger size tool on each ladder truck.


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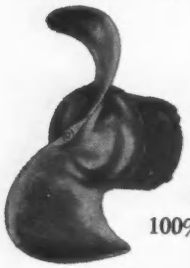

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## Proved method of saving lives while also reducing smoke damage

Fire departments **nation-wide** attest to the speed with which Super Vac provides **controlled ventilation**... so necessary in modern fire fighting. This multi-purpose unit primarily (1) gets rid of smoke and fumes through its powerful vacuum action... or, (2) furnishes a tremendous blast of fresh air into the smoke-congested area, reducing the dangers of combustion and asphyxiation. Although one unit is often sufficient, **complete controlled ventilation** can be more speedily accomplished by using two or more units... one or more units **pulling out the smoke and fumes** while the remaining units **blow in a steady supply of fresh air.**

★ **Highly portable... operates in any position**
★ **Design permits vertical stacking**
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### Tests at Tri-State

AT THE annual Tri-State Firemen's field day held at Memorial Park, Webster, Massachusetts, Sunday, September 27, tests were conducted to compare the features of unlined linen forestry hose with lightweight lined forestry hose.

Through the courtesy of Chief Ranger Clarence Edson of the Rhode Island Division of Forestry, two 1,000-ft. lines were laid out, one being of conventional unlined forestry hose and the other being the lined "Forest-King" manufactured by the Goodall Rubber Company, 493 Whitehead Road, Trenton, New Jersey. The two lines were connected by a siamese to the same outlet of a centrifugal fire department pump so that uniform supply and pressure could be obtained. Each line had a conventional open tip forest fire nozzle attached from which the Pitot readings could be taken. The first test was to compare the time required to charge the two types of hose and obtain water at the nozzle. For this test a ⅜-in. tip was used and with the pump operating at 150 psi.

Water traversed the 1,000-ft. lined "Forest-King" hose in 53 seconds but required 150 seconds to charge the unlined fire hose. The nozzles supplied by the lined hose showed 96 pounds nozzle pressure or approximately 40 gpm. The nozzles on the unlined hose had 73 pounds pressure, or 35 gpm.

The nozzle tips were then changed to ½-in. tips and pressure then increased to 200 pounds. This provided 93 pounds to the nozzle on the lined hose and 70.5 gpm but only 38 pounds on the unlined hose, or 45 gpm.

The superiority of the lined hose may be appreciated by the fact that with this flow, only 107 pounds was lost in a 1,000-ft. line whereas with the unlined hose at a much smaller flow, 162 pounds were lost.


FIGHT HEART DISEASE
GIVE HEART FUND

# A Boom in Membership!

AS MENTIONED last month, the year 1959 brought a steady growth in the number of fire departments joining NFPA as new members.

The list below gives more evidence of this upsurge. Note that twenty-six states are represented by paid, call and volunteer fire departments from cities, towns and counties. Through the year, there has been no consistent geographical pattern to the influx of new NFPA fire department members. Every section of the United States has been represented.

It seems likely that this membership growth will continue, particularly through the early months of the new year. If you, as a reader of FIREMEN magazine, would like to encourage other fire departments to join, just drop a note to the NFPA Executive Office. We will send you some promotional materials that present a convincing picture of the value of membership in the Association.

**California:** Valley of the Moon Fire District, Boyes Hot Springs; Fair Oaks Fire Department, Fair Oaks; Grass Valley Fire Department, Grass Valley; Merced County Fire Department, Merced; Pacific Fire District, Sacramento; Central Fire Protection District, Walnut Creek.

**Connecticut:** Central Fire Company No. 1, Central Village; Hotchkiss Hose Company No. 1, Derby; Belltown Fire Department, Inc., Stamford.

**Florida:** Trail Park Volunteer Fire Department, Lake Worth; Brant Volunteer Fire Department, Pensacola; Ruskin Fire Department, Ruskin.

**Illinois:** Centralia Fire Department, Centralia; Cicero Fire Department Cicero; Washington Fire Department, Washington.

**Indiana:** Beech Grove Fire Department, Beech Grove; Scott Township Volunteer Fire Department, Inglefield; Osgood Volunteer Fire Department, Osgood.

**Iowa:** Breda Fire Department, Breda; Charles City Fire Department, Charles City; Danville Fire Department, Danville.

**Kansas:** Partridge Volunteer Fire Department, Partridge.

**Kentucky:** Bethany Fire Department, Bethany; Park Hills Fire Department, Covington P. O.; Salt Lick Volunteer Fire Department, Salt Lick;

**Louisiana:** Mer Rouge Volunteer Fire Department, Mer Rouge.

**Maryland:** Galesville Volunteer Fire Department, Galesville.

**Massachusetts:** Avon Fire Department, Avon; Billerica Fire Department, Billerica; Methuen Fire Department, Methuen; Oakham Fire Department, Oakham; West Tisbury Fire Department, West Tisbury.

**Michigan:** Madison Township Fire Department, Adrian; Springfield Fire Department, Battle Creek; Grandville Fire Department, Grandville; South Lyon Fire Department, South Lyon.

**Mississippi:** Ellisville Volunteer Fire Department, Ellisville.

**Missouri:** Maryland Heights Fire Department, Maryland Heights; Gardenville Fire Department, St. Louis.

**New Jersey:** East Orange Fire Department, East Orange; Harrison Fire Department, Harrison; Reserve Fire Company, Inc., Kenilworth; Franklin Township Fire Chiefs' Association, Middlebush.

**North Carolina:** Smithfield Fire Department, Smithfield.

**North Dakota:** Devil's Lake Fire Department, Devil's Lake; Dickinson Rural Fire District, Dickinson.

**Oklahoma:** Kingfisher Fire Department, Kingfisher.

**Oregon:** Gervais Volunteer Fire Department, Gervais; Newberg Fire Department, Newberg.

**Pennsylvania:** Hanley Hose Company No. 1, Chester; Gladwyne Fire Company, Gladwyne; Levittown Fire Company No. 1, Levittown; West Wyomissing Fire Company No. 1, West Lawn.

**South Dakota:** Astoria Volunteer Fire Department, Astoria.

**Texas:** Kirby Volunteer Fire Department, Converse; Devine Volunteer Fire Department, Inc., Devine.

**Utah:** Salt Lake County Fire Department, Salt Lake City; Springville Fire Department, Springville.

**Vermont:** Warren Fire Department, Warren.

**West Virginia:** Peterstown Volunteer Fire Department, Peterstown.

**Wisconsin:** Amery Volunteer Fire Department, Amery; Delafield Fire Department, Pewaukee; Silver Lake Fire Department, Silver Lake.


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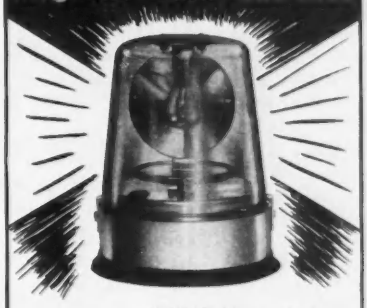

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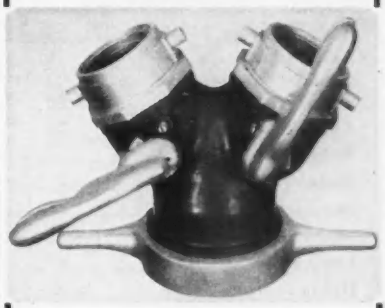

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McIntire's Twin Siamese Hydrant Gate (Fig. 164AN), 4½" inlet with 2-2½" female outlets features non-sticking, quarter turn ball valves. Built in bronze and chrome plated. Made also in 2½" male outlets. Get the Best — Specify McIntire.

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# this month's *Equipment News*

### "Volunteer's Special" 500 gpm Pumper

The "Volunteer's Special," a 500 gpm pumper on a commercial chassis, with 500 gallon booster tank and other equipment is designed particularly for volunteer departments who are limited by small budgets. Manufacturer guarantees to pass Class A Underwriters' pumping tests and to meet your state requirements. For complete details write to *Edwin R. Jenney*, 2024 Heitman Street, Fort Myers, Florida.

### Radio and Voice Amplifier

The all new transistorized "Road Commander," a mobile radio and public address amplifier for fire service vehicles is announced by *Lawrence, Inc.*, P. O. Box 5106, Seven Oaks Station, Detroit 35, Michigan. Write manufacturer for free data sheet.

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Roy W. Wilson, 40-year-old President of *Ward LaFrance Truck Corporation*, was killed December 11 in a plane crash near Chemung County airport in Elmira, New York. . . . Willson Products Division, *Ray-O-Vac Company*, Reading, Pennsylvania, announces the "Volt Shield" tough plastic safety hat designed for wear by those near charged electrical lines. . . . A new eight-page, two-color catalog on automatic emergency lighting equipment is offered by *Electric Cord Company*, 432 Plane Street, Newark 2, New Jersey. . . . H. C. R. Folmer, Fort Lauderdale, Florida, has been appointed Florida distributor for *National Foam System, Inc.* . . . Motorola is expanding its line of extensively transistorized MOTRAC two-way radio models of 25 and 50 watt units in low band frequencies and 30, 60 and 80 watt units for high band. Write to *Motorola Communications and Industrial Electronics Division*, 4501 West Augusta Boulevard, Chicago 51, Illinois.

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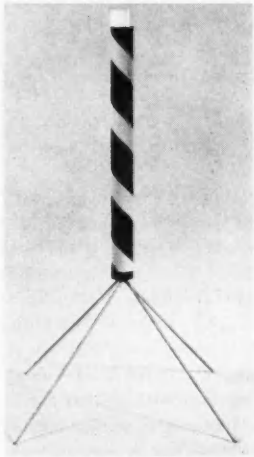

### Night Warning Device

The "Safety Signal Stick" warning device is like a red and white striped candy cane with non-chip, fluorescent finish clearly reflected by oncoming headlights up to 400 feet away. Four metal legs drop from the metal cylinder to form a stand said to withstand winds up to 55 m.p.h. Low in cost; no batteries required. Write to *Safety Signal Sales Company*, 15 Hinchley Road, Waban 68, Massachusetts.

### Nifty Fire Ax Tie Clip

Here is the high quality "Ax of Recognition" tie clip that will add to your appearance. Made by a fireman for firemen. Available as shown or with IAFF emblem. Write to *Captain Ray Klemm*, 1032 Malzahn Street, Saginaw, Michigan.

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A new model H100 fire hydrant conforming to A.W.W.A. specifications and featuring bronze-to-bronze seat ring threads is described in a twenty-page manual available through *A. P. Smith Manufacturing Company*, East Orange, New Jersey. . . . A new forward control, van-type vehicle designed for disaster and rescue service has been introduced by *Divco-Wayne Corporation, Divco Truck Division*, 22000 Hoover Road, Detroit 5, Michigan. . . . A compact, low-priced two-way "Transicom" mobile radio is announced by Mobile Radio Sales Department, *Allen B. DuMont Laboratories, Inc.*, 750 Bloomfield Avenue, Cliffton, New Jersey. . . . The unique work glove called "Glo-Gluv" with its "Day-Glo" lustrous color provides spot identification of the wearer and also helps prevent loss during night work. Free sample pair on request to *Granet Corporation*, Framingham, Massachusetts.

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### Self-Contained Flasher Light

Here is a recently announced vehicle flasher light, magnetic based or with permanent mounting, with a 100 candle power bulb and 360° Fresnel lens designed for the part-time vehicle. Chrome base, height 6 in., diameter 5 in. and available in 6 or 12 volts with red, amber or blue lens. Write to Dept. AC., *North American Signal Company*, 1620 South Canal Street, Chicago 16, Illinois.


The INDIAN

Is Ready for the "WAR PATH"!

Here's an "INDIAN FILE" about to go into action . . . every man armed with his INDIAN FIRE PUMP . . . the 5 gal. back-pack extinguisher which hacks down fire like a tomahawk cleaving a sapling.

Many INDIAN FIRE PUMPS have been in service 15 years and more. That's because they are built right by a company established in 1888 . . . built to take hard usage. *(Spare parts are quickly available.)*

NO. 90 INDIAN

The highly popular sliding pump type. 5 gal., form fitting galvanized steel or solid brass tank. Uses only clear water. When slung on back leaves hands free.

ALSO MADE IN Model No. 80 (lever type pump and handle). Large filler opening. Leak proof. Continuous pressure. Both types meet UNDERWRITERS LABORATORIES specifications.

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D. B. SMITH & CO. *"for Over 70 Years the Leaders"* 408 MAIN ST., UTICA 2, N.Y.

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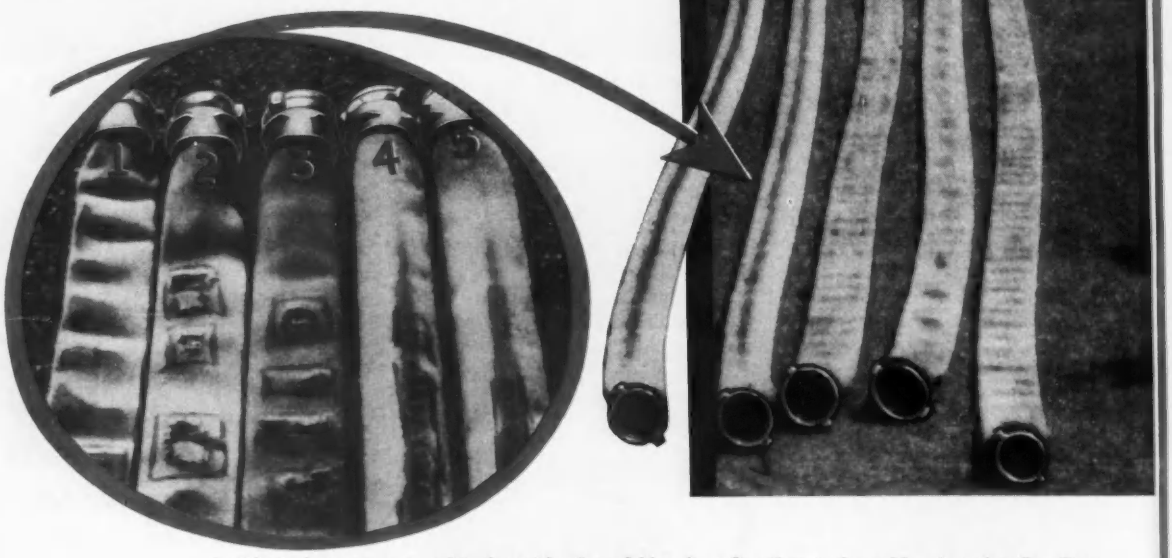
C. E. Hickey & Sons, Ltd., Hamilton

# New, Bonded All-Dacron*

# Ambassador

# Ranks best in tortuous abrasion test!

*50-foot lengths of hose were dragged on asphalt pavement at speed of 5 miles per hour. Test included 5 types of 2½" hose: 1. Fyr-Fyter 100% Dacron, Tuff-Weave industrial, single jacket; 2. Dacron/Cotton, double jacket; 3. Cotton, double jacket; 4. 100% Dacron, double jacket (unbonded); 5. Fyr-Fyter Ambassador, 100% Dacron,* BONDED *double jacket.*




*Inside jacket was exposed in hose No. 2 and No. 3 at 3 miles; in hose No. 4 at 6 miles. Test was stopped after 10 miles. All hose except Nos. 1 and 5 appeared to have exceeded their maximum service life. Burst tests further proved Nos. 2, 3 and 4 unserviceable. Hose No. 1 and No. 5 showed no appreciable loss in burst strength!*

This tortuous test proves you can expect more durability and longer service life from Fyr-Fyter's new Ambassador Hose. Its rugged resistance to dragging and scuffing is due to an entirely new way of fabrication. Both inner and outer jackets are 100% Dacron which makes them practically immune to wear. The two jackets are also permanently rubber bonded. This means they can't slip or rub to cause any concealed wear. The bonding also gives added falling ember protection. Bonded, 100% Dacron hose is an exclusive product of Fyr-Fyter!

**NO DRYING REQUIRED**

The extremely low absorbency of all-Dacron jackets eliminates drying operations, and also the need for stand-by hose. Rack it right after use with no fear of mildew.

Other outstanding Ambassador features include lighter weight for easier handling, amazing strength without bulk, flexibility without kinking, compactness and resistance to chemicals. Write today for complete details and prices. **DuPont trademark for its polyester fiber.*

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*Branches, representatives and distributors in all principal cities*

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**Presents**

# Their New

# "BALL TYPE" VALVE & SIAMESE

**QUARTER-TURN**

**FULL FLOW**

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**OPERATES EASILY UNDER HIGH PRESSURE**

*Body painted red with polished bronze or chromium plated trim.*
*Pin Lug or Sensible Lug Swivel.*

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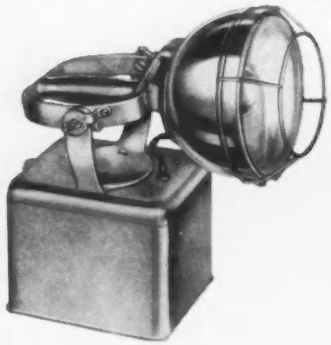


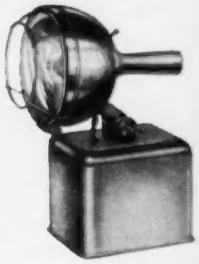
# CARPENTER "PORTALITES" WITH *RECHARGEABLE BATTERIES*

DESIGNED FOR MODERATE TO FREQUENT USAGE . . .

**CARPENTER-LIGHTS** with heavy-duty rechargeable batteries are ideal units for frequent-use applications. Savings over dry battery replacements pay off the initial cost differential after 50-75 hours of use. Corrosion-proof terminals plus efficient spring contacts allow insertion of spare batteries in only 10 seconds! . . . another Carpenter exclusive. Batteries are essentially nonspillable . . . may be placed in any practical position.

**PRICES:**
WS-6 . . . **$54.00**
Super-6 . . . **$45.00**
Running board holder . . . **$4.00**
Smoke-fog penetrating lens – **extra $1.00**

**Type WS-6** *(Illus. above left)* The ideal light for chiefs and officers. Especially valuable for rescue work . . . where seconds count, it is on the job before mounted searchlights can be positioned. Operates as powerful searchlight or worklight. One battery charge gives 24 hours continuous service as worklight or 6 to 8 hours as searchlight . . . much longer if used intermittently. Only 12 lbs. including battery! Convenient finger-tip, self-balancing handle and beautiful duro-satin finish. Available with running board holder and smoke-fog penetrating lens as optional extras. **Type Super-6** *(Illus. right)* is the same fine basic unit except with rugged one-piece handle and housing.



## CARPENTER-LIGHTS OFFER:

Automotive Lights

## ULTRA-POWER . . .

the brilliancy you need to **see** danger, **warn** of danger, and **prevent** danger. Every component from battery and bulb to reflector and lens is designed to give **maximum** light.

Beacon Lights

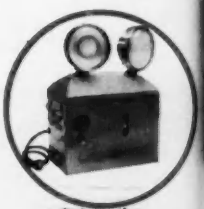
## DEPENDABILITY . . .

The peace of mind that comes from knowing every light is designed, built, and inspected to the rigid standards which have made the Carpenter name famous.

"Portalites"

## RUGGED CONSTRUCTION . . .

built to withstand the use and abuse of many years' service under the most trying conditions. No compromise on quality.



Automatic Emergency Lights

## *NEVER SETTLE FOR LESS!*

**MANY OTHER LIGHTS INCLUDING U. S. BUREAU OF MINES PERMISSIBLE**
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